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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/991,164	11/16/2001	John C. Weast	10559-550001/P12570	3532
59796 7590 04/05/2007 INTEL CORPORATION c/o INTELLEVATE, LLC P.O. BOX 52050 MINNEAPOLIS, MN 55402			EXAMINER CHEN, TSE W	
			ART UNIT 2116	PAPER NUMBER
SHORTENED STATUTORY PERIOD OF RESPONSE			MAIL DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No. 09/991,164	Applicant(s) WEAST, JOHN C.	
	Examiner Tse Chen	Art Unit 2116	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A. SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 January 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-37,39,41 and 42 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-37,39,41 and 42 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 January 2007 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on January 3, 2007 has been entered.

Claim Objections

2. Claims 24, 28 are objected to because of the following informalities:
- As per claim 24, "a time-out period is about to expire" should be "the time-out period is about to expire"; there should be only one period at the end of the claim.
 - As per claim 28, "determining a power state of a non-volatile storage device" should be "determining the power state of the non-volatile storage device".

Appropriate correction is required.

Claim Rejections - 35 USC § 101

3. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

4. Claims 2, 6-9, 14-15, 18-19, 22-30 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. A claim is limited to a practical application when the method, as claimed, produces a concrete, tangible and useful result; i.e., the method recites a step or act of producing something that is concrete, tangible and useful. Referring to the "Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility"

in determining whether the claim is for a "practical application," the focus is not on whether the steps taken to achieve a particular result are useful, tangible and concrete, but rather that the final result achieved by the claimed invention is "useful, tangible and concrete."

- As per claims 2-6, 27-30, "determining whether the device is operating in a limited power state prior to determining whether the device is activated or inactivated" does not produce any tangible result.
- As per claims 6-8, 29-30, "writing one or more buffered write operations to the device upon an occurrence of a predetermined condition after activating the device if the device is determined to be inactivated" does not produce any tangible result if the predetermined condition does not occur.
- As per claim 9, "determining whether the requested write operation corresponds to an entity registered with the intermediate FSD to participate in the method of controlling device write operations" does not produce any tangible result.
- As per claims 14-15, "identifying the subset of the entire file to be read into memory" does not produce any tangible result.
- As per claims 18-19, there is no tangible result produced "if a superset of the requested file portion is" NOT "read into memory".
- As per claims 22-23, "determining whether the requested read operation corresponds to a file type registered with the intermediate file system driver to participate in the method of controlling device read operations" does not produce any tangible result.
- As per claims 24-26, there is no tangible result produced "if a limited power condition is" NOT "determined to exist and a time-out period is" NOT "about to expire".

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 1, 27-28 are rejected under 35 U.S.C. 102(e) as being anticipated by Klaassen et al., US Patent 6622252, hereinafter Klaassen.

7. In re claim 1, Klaassen discloses a method comprising:

- Receiving a request on a platform having a battery mode to perform a write operation to a file system device [disk drive] [col.1, ll.54-55; col.3, ll.16-17; col.4, l.33].
- Determining whether the file system device is activated [spindle speed at normal operating velocity] or inactivated [col.1, ll.52-54].
- If the file system device is determined to be activated, accessing the file system device to perform the requested write operation [writing when spindle speed activated accordingly] [col.1, ll.52-54].
- If the file system device is determined to be inactivated [spindle speed not at normal operating velocity], buffering [inherently, the write operation initiated is buffered or temporarily held until the file system device is activated to begin the write operation] the write operation to physical memory [inherently, a physical memory is needed to buffer or temporarily hold the write operation] [col.1, ll.52-54].

- Thereby extending battery life of the platform while minimizing adverse effects on performance and/or functionality [speed and data transfer rate reduction not considered to be at subjective “adverse” level that is intolerable] of the platform [col.2, ll.25-40; capable of performing limitation through power conservation without adverse effects].

8. In re claim 27, Klaassen discloses a machine-accessible medium embodying instructions [associated with method] for causing a machine [e.g., portable electronic device] to perform operations [col.3, ll.20-22] comprising:

- Determining a power state [power saving mode or not] of a non-volatile storage device [magnetic disk drive] [col.1, l.16, ll.55-57].
- Selectively buffering [inherently, the write operation initiated is buffered or temporarily held until the file system device is activated to begin the write operation] a file system write request, in physical memory [inherently, a physical memory is needed to buffer or temporarily hold the write operation], the write request relating to the non-volatile storage device based on the determined power state of the non-volatile storage device [col.1, ll.40-57; write request buffered when power state is in power saving mode with components such as spindle not at normal operating velocity].
- Determining whether the device is operating in a limited power state [power saving mode] prior to determining whether the device is activated or inactivated [col.1, ll.55-57; limited power state determined for disengagement].
- Wherein the buffering prevents unnecessary activation of the non-volatile storage device [col.1, ll.55-57; capable of preventing “unnecessary” activation through buffering].

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9. As to claim 28, Klaassen discloses, wherein determining a power state of a non-volatile storage device comprises determining whether the non-volatile storage device is operating under battery power [col.2, ll.1-12; power states may also include battery or external power].

10. Claims 31-32 and 35-37 are rejected under 35 U.S.C. 102(e) as being anticipated by Morcom, US Patent 6647499.

11. In re claim 31, Morcom discloses a machine-accessible medium embodying instructions [110] for causing a machine to perform operations comprising:

- Determining a power state of a device [104] [col.4, l.64; determine power on in order to operate].
- Based on the determined power state of the device and in response to a file system request to read a portion of the file [data] from the device, selectively reading a superset [requested data] of the requested file portion from the device into physical memory [108], wherein the superset of the requested file portion is logically related to the requested portion [col.4, l.45 – col.5, l.6].

12. As to claim 32, Morcom discloses, wherein selectively reading a superset of the requested file portion into memory comprises reading the entire file into physical memory [col.4, l.58 – col.5, l.26; e.g., fill 108 with entire file].

13. As to claim 35, Morcom discloses, wherein the requested file portion is read from the device and returned to a requesting process [program] before a remainder of the superset is read into physical memory [col.5, ll.7-26; first data is returned before additional data is read].

14. As to claim 36, Morcom discloses, comprising accessing the superset read into physical memory to fulfill a subsequent file system request to read a portion of the file [col.5, ll.7-19].

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15. As to claim 37, Morcom discloses, comprising instructions for causing a machine to deactivate the device after reading the superset of the requested file portion. [col.4, l.58 – col.5, l.6].

16. Claims 39 and 42 are rejected under 35 U.S.C. 102(b) as being anticipated by Rao, US Patent 5812883.

17. In re claim 39, Rao discloses a system [fig.2] comprising:

- A processor [100] communicatively coupled to physical memory [222].
- A nonvolatile storage device [208] communicatively coupled to the processor, wherein access to the nonvolatile storage device is controlled by a file system driver [206] responsive to file system requests [col.4, ll.41-54].
- An intermediate file system driver [202] to receive user customized parameters and to receive file system requests, the intermediate file system driver to determine read/write policy for controlling access to the file system driver based on the user customized parameters, wherein the file system requests are to be intercepted by the intermediate file system driver, wherein the file system driver accesses the nonvolatile storage device in accordance with the read/write policy, and wherein the read/write policy is to minimize at least one of unnecessary device access operations and unnecessary device activation-deactivation operations [parameters and requests pass first to intermediate FSD which comprises circuitry that oversees the control and compatibility of file system driver] [col.5, ll.19-46; col.7, ll.6-48; col.9, l.13 – col.10, l.34; e.g., prolong period of inactivity to reduce unnecessary device activation-deactivation operations with the extreme being

always on so unnecessary device activation-deactivation operations would be absolute minimum].

- Wherein the intermediate file system driver intercepts a file system write request and selectively buffers the write request to physical memory until a predetermined condition is detected, wherein responsive to the predetermined condition [passing error monitoring/correcting], the intermediate file system driver initiates performance of the write request of the buffered write request [col.5, ll.19-46].

18. As to claim 42, Rao discloses, wherein an application [windows] executing on the processor registers with the intermediate file system driver [via control panel] to indicate compliance with selective buffering techniques to be used in conjunction with the read/write policy [col.6, l.63 – col.7, l.5].

Claim Rejections - 35 USC § 103

19. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

20. Claims 2-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Olds et al., US Patent 6826630, hereinafter Old, in view of Klaassen.

21. In re claim 2, Old discloses a method comprising:

- Receiving a request in a host processor [216 operably with 202] to perform a write operation [write command] to a device [100] communicatively coupled to the host processor [fig.2; col.4, ll.52-54; col.5, ll.1-3].

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- If the device is activated, accessing the device to perform the requested write operation [col.6, ll.3-5, ll.24-25; device is activated in order for write operations to be performed].
 - Buffering [stored for later processing as queues] the write operation to physical memory [e.g., 224, 400] coupled to the host processor, by an intermediate file system driver [232] executing on the host processor [col.5, l.11; col.6, l.46; col.2, ll.9-11].
22. Old did not disclose the details associated with the operating states [e.g., activated, inactivated, limited power].
23. Klaassen discloses a method comprising
- Receiving a request to perform a write operation to a device [disk drive] [col.1, ll.54-55; col.3, ll.16-17; col.4, l.33].
 - Determining whether the device is activated [spindle speed at normal operating velocity] or inactivated [col.1, ll.52-54].
 - If the device is determined to be activated, accessing the device to perform the requested write operation [writing when spindle speed activated accordingly] [col.1, ll.52-54].
 - If the device is determined to be inactivated [spindle speed not at normal operating velocity], buffering [inherently, the write operation initiated is buffered or temporarily held until the file system device is activated to begin the write operation] the write operation to physical memory [inherently, a physical memory is needed to buffer or temporarily hold the write operation] [col.1, ll.52-54].
 - Determining whether the device is operating in a limited power state [power saving mode] prior to determining whether the device is activated or inactivated [col.1, ll.55-57; limited power state determined for disengagement].

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24. It would have been obvious to one of ordinary skill in the art, having the teachings of Klaassen and Old before him at the time the invention was made, to modify the method of Old to include the teachings of Klaassen, in order to obtain the claimed method. One of ordinary skill in the art would have been motivated to make such a combination as it provides a way to reduce power consumption in disk drives [device] [Klaassen: col.2, ll.25-27; inclusion of various operating states with their determination affords power saving – e.g., power down device in inactive states].

25. As to claim 3, Old discloses, wherein the device comprises a disk drive [100], a non-volatile memory component, or a network access device [col.4, l.29].

26. As to claim 4, Klaassen discloses, wherein determining whether the device is activated or inactivated comprises determining whether the device is powered-up or powered-down, respectively [col.1, ll.40-57; spindle velocity is related to power].

27. As to claim 5, Old discloses, wherein receiving a request to perform a write operation comprises using an intermediate file system driver [232] to intercept a request bound for a file system driver [212] [col.4, l.45; 232 intercepts operations for 212 in order to prioritize].

28. As to claim 6, Klaassen discloses, comprising writing one or more buffered write operations to the device upon an occurrence of a predetermined condition [e.g., power saving mode disengaged] after activating the device if the device is determined to be inactivated [col.1, ll.40-57].

29. In re claim 7, Old and Klaassen discloses each and every limitation as discussed above in reference to claims 2 and 6. Old discloses the method comprising:

- Writing one or more buffered write operations to the device upon an occurrence of a predetermined condition [e.g., occurrence of scheduled time] [col.11, ll.42-44].
- Wherein the predetermined condition is identified by the intermediate FSD [col.6, l.46; intermediate FSD schedules according to priority for execution].
- Wherein the buffered write operations are stored in physical memory [col.5, l.11].
- Wherein the predetermined condition comprises one or more of the following: detecting that a memory write buffer is full, detecting that a predetermined amount of time has lapsed [i.e., time elapsed according to schedule], detecting that a predetermined volume of data has been buffered, detecting that battery power is at a threshold level, detecting that a computer system with which the device is associated is being turned off or put in a standby state, and detecting an explicit request that the write buffer contents be committed to non-volatile storage [col.11, ll.42-44]

30. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Klaasen and Old as applied to claim 7 above, and further in view of Barrett, US Patent 6711686.

31. Klaasen and Old disclose each and every limitation as discussed above. Klaasen and Old did not discuss a user input requesting that the buffered write operations be committed to non-volatile storage.

32. Barrett discloses a method comprising receiving user input [exit windows] requesting that the buffered write operations be committed to nonvolatile storage [disk] and detecting an input requesting the write buffer contents [disk cache] be committed to nonvolatile storage [col.1, l.62 – col.2, l.9].

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33. It would have been obvious to one of ordinary skill in the art, having the teachings of Barrett, Klaasen and Old before him at the time the invention was made, to modify the method of Klaasen and Old to include the teachings of Barrett, in order to obtain the claimed method. One of ordinary skill in the art would have been motivated to make such a combination as it provides a way to avoid security breaches caused by file corruption [Barrett: col.1, 1.62 – col.2, 1.9].

34. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Klaasen and Old as applied to claim 2 above, and further in view of Borr, US Publication 20020019874.

35. Klaasen and Old disclose each and every limitation as discussed above. Old discloses the method of controlling device write operations, the controlling being performed by the intermediate FSD [232] [col.6, 1.46]. Klaasen and Old did not disclose explicitly determining whether the requested write operation corresponds to an entity registered to participate in the method of controlling device write operations.

36. Borr discloses a method comprising determining whether the requested write operation corresponds to an entity [e.g., file lock] registered with the intermediate FSD [e.g., 110] to participate in the method of controlling device write operations [0107; via access mode such as writable or read only].

37. It would have been obvious to one of ordinary skill in the art, having the teachings of Borr, Klaassen and Old before him at the time the invention was made, to include the explicit well known teachings of Borr, in order to obtain method comprising determining whether the requested write operation corresponds to an entity registered with the intermediate FSD to participate in the method of controlling device write operations, the controlling being performed by the intermediate FSD [i.e., intermediate FSD of Klaassen and Old utilizes Borr's teachings –

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e.g., file lock – to determine whether the write operations can be performed]. One of ordinary skill in the art would have been motivated to make such a combination as it provides a way to protect data integrity [Borr: 0008].

38. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Klaasen and Old as applied to claim 2 above, and further in view of Giovannetti, US Patent 5815648.

39. Klaasen and Old disclose each and every limitation as discussed above. Klaasen and Old did not disclose explicitly that buffering the write operation to physical memory comprises deleting from physical memory a prior buffered write operation request that seeks to modify a same storage location on the device as the write operation to be buffered.

40. Giovanetti discloses a method wherein buffering [write back] the write operation to physical memory comprises deleting [via overwriting or updating] from physical memory a prior buffered write operation request that seeks to modify a same storage location on the device as the write operation to be buffered [col.2, ll.2-4, ll.11-19].

41. It would have been obvious to one of ordinary skill in the art, having the teachings of Giovanetti, Klaasen and Old before him at the time the invention was made, to include the explicit well known teachings of Giovanetti, in order to obtain the claimed method. One of ordinary skill in the art would have been motivated to make such a combination as it provides an efficient way to update data to a disk [Giovanetti: col.2, ll.11-19].

42. Claims 11-14, 16-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Klaasen in view of Morcom, US Patent 6647499.

43. In re claim 11, Klaassen discloses a method comprising:

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- Receiving a request from a process executing on a host processor [associated with portable laptop computer] to read a portion of a file from a device [disk drive] communicatively coupled to the host processor [col.1, l.16, ll.54-55; col.3, ll.16-17; col.4, l.33; col.6, ll.56-57].
- Determining whether a limited power condition [battery powered] exists [col.2, ll.32-40].
- If a limited power condition [external powered] is determined not to exist, accessing the device to read the requested file portion into memory [col.4, ll.17-24; read normally].

44. Klaassen did not disclose accessing the device to read a superset of the requested file portion into memory if a limited power condition is determined to exist.

45. Morcom discloses a method comprising:

- Receiving a request from a process executing on a host processor [106] to read a portion of a file from a device [104] communicatively coupled to the host processor [fig.1; col.4, ll.15-18, ll.45-52].
- If a limited power condition is determined to exist [battery powered], accessing the device to read a superset [read ahead] of the requested file portion into memory [108] coupled to the host processor, wherein the superset of the requested file portion is logically related to the requested portion, and wherein the superset is selectively determined by an intermediate FSD [110] executing on the host processor [fig.1; col.4, ll.15-35; col.4, l.58 – col.5, l.26; data read additionally for subsequent check].

46. It would have been obvious to one of ordinary skill in the art, having the teachings of Klaassen and Morcom before him at the time the invention was made, to modify the method of Klassen to include the teachings of Morcom, in order to obtain the claimed method. One of

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ordinary skill in the art would have been motivated to make such a combination as it provides a way to prolong battery life [Morcom: col.1, ll.48-57].

47. As to claim 12, Morcom discloses, wherein reading a superset of the requested file portion into memory comprises reading the entire file into memory [col.4, l.58 – col.5, l.26; e.g., fill 108 with entire file].

48. As to claim 13, Morcom discloses, wherein reading a superset of the requested file portion into memory comprises reading a subset of the entire file into memory [col.4, l.58 – col.5, l.26; any set is a subset of itself].

49. As to claim 14, Morcom discloses, comprising identifying the subset of the entire file to be read into memory [col.4, ll.53-57].

50. As to claim 16, Morcom discloses, comprising returning the requested file portion to the requesting process [col.5, ll.7-19].

51. As to claim 17, Morcom discloses, wherein, if a limited power condition exists, the requested file portion is read from the device and returned to the requesting process before a remainder of the superset is read into memory [col.5, ll.7-26; first data is returned before additional data is read].

52. As to claim 18, Morcom discloses, wherein, if a superset of the requested file portion is read into memory, further comprising accessing the superset read into memory to fulfill a subsequent request from the process for a portion of the file [col.5, ll.7-19].

53. As to claim 19, Morcom discloses, comprising, if a superset of the requested file portion is read into memory, deactivating the device. [col.4, l.58 – col.5, l.6].

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54. As to claim 20, Morcom discloses, wherein the device comprises a disk drive or a network access device. [col.3, ll.36-45].

55. Claims 15, 22-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Klaassen and Morcom as applied to claims 11 and 14 above, and further in view of Hirofuji, US Publication 20020091902.

56. Klaassen and Morcom disclose each and every limitation as discussed above. Klaassen and Morcom did not disclose identifying the subset of the entire file to be read into memory is based on one or more file access trends.

57. In re claim 15, Hirofuji discloses a method wherein identifying the subset of the entire file to be read into memory is based on one or more file access trends [0063-64].

58. It would have been obvious to one of ordinary skill in the art, having the teachings of Hirofuji, Klaassen and Morcom before him at the time the invention was made, to modify the method of Klaassen and Morcom to include the teachings of Hirofuji, in order to obtain the claimed method. One of ordinary skill in the art would have been motivated to make such a combination as it provides a way to improve data access efficiency [Hirofuji: 0005-7].

59. As to claim 22, Hirofuji discloses, comprising determining whether the requested read operation corresponds to a file type [characteristic] registered to participate in the method of controlling device read operations [0063].

60. As to claim 23, Hirofuji discloses, wherein each of a plurality of file types has an associated priority and wherein the method further comprising selectively storing the superset of the requested file portion into memory based on its relative priority [0064].

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61. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Klaassen and Morcom as applied to claim 11 above, and further in view of Morton et al., US Patent 6442647, hereinafter Morton.

62. Klaassen and Morcom disclose each and every limitation as discussed above. Klaassen and Morcom did not disclose reading the superset of the requested file portion into memory comprises translating the received read request for the file portion into a plurality of read requests that collectively cause the superset to be read from the device.

63. Morton discloses a method wherein reading the superset [data blocks] of the requested file portion [requested data blocks] into memory comprises translating the received read request for the file portion into a plurality of read requests [commands] that collectively cause the superset to be read from the device [col.2, ll.40-63].

64. It would have been obvious to one of ordinary skill in the art, having the teachings of Morton, Klaassen and Morcom before him at the time the invention was made, to modify the method of Klaassen and Morcom to include the teachings of Morton, in order to obtain the claimed method. One of ordinary skill in the art would have been motivated to make such a combination as it provides a way to improve latency time for data transfers in a disk system [Morton: col.2, ll.40-63].

65. Claims 24-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Old in view of Ryu, US Patent 5978921, in view of Klaassen.

66. In re claim 24, Old discloses a system [fig.2] comprising:

- At least one nonvolatile storage device [100].
- A physical memory [224, 400].

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- A processor [216] communicatively couple to the physical memory and the at least one nonvolatile storage device, the processor to execute instructions to perform operations comprising:
 - Detecting that a time-out period [e.g., scheduled time] is to expire for a non-volatile storage device that provides access to data [col.11, ll.42-44].
 - If the time-out period is about to expire, writing one or more buffered write operations from physical memory to the non-volatile storage device, wherein the writing is in response to an intermediate file system driver [232] detecting that a time-out has occurred [col.5, l.11; col.6, l.46; col.2, ll.9-11; intermediate FSD schedules and dispatches buffered operations accordingly].

67. Old did not disclose the details associated with the operating states [e.g., activated, inactivated, limited power].

68. Ryu discloses a system [fig.2] comprising:

- At least one nonvolatile storage device [232, peripheral device].
- A physical memory [272].
- A processor [276] communicatively couple to the physical memory and the at least one nonvolatile storage device, the processor to execute instructions to perform operations comprising:
 - Detecting a power mode [e.g., suspend ram] is to be set for deactivating a non-volatile storage device that provides access to data [col.4, l.44 – col.5, l.20; col.7, ll.3-5; suspend ram set to turn off non-volatile storage device].
 - Determining whether a limited power condition [battery] exists [col.6, ll.40-41].

- If a limited power condition is determined to exist and a power mode is about to be set [e.g., suspend ram is about to turn off non-volatile storage device at s80], writing one or more buffered write operations from physical memory to the nonvolatile device before the nonvolatile device is deactivated [col.6, l.63 – col.7, l.5].

69. Ryu did not disclose explicitly that the setting of the power mode involves a time-out period.

70. Klaassen discloses operations comprising detecting that a time-out period [predetermined period of time associated with power mode] is to expire for deactivating a nonvolatile storage device [disk drive] that provides access to data [col.1, ll.40-57].

71. It would have been obvious to one of ordinary skill in the art, having the teachings of Ryu, Klaassen and Old before him at the time the invention was made, to modify the method of Old to include the teachings of Ryu and Klaassen, in order to obtain the system comprising the processor to execute instructions to perform operations comprising if a limited power condition is determined to exist and a time-out period is about to expire, writing one or more buffered write operations from physical memory to the non-volatile storage device before the non-volatile storage device is deactivated, wherein the writing is in response to an intermediate file system driver detecting that a time-out has occurred [Ryu writes buffered operations based on limited power condition and a time-out period associated with the power mode as taught by Klaassen]. One of ordinary skill in the art would have been motivated to make such a combination as it provides a way to reduce power consumption in disk drives [device] [Ryu: col.4, ll.44-46;

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Klaassen: col.2, ll.25-27; inclusion of various operating states with their determination affords power saving – e.g., power down device in inactive states].

72. As to claim 25, Ryu discloses, wherein the nonvolatile storage device that provides access to data comprises a disk drive [232, 300] or a network access device.

73. As to claim 26, Ryu discloses, wherein determining whether a limited power condition exists comprises determining whether a system associated with the device is operating under battery power [col.6, ll.52-62].

74. Claims 29-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Klaassen and as applied to claim 28 above, and further in view of Ryu.

75. Klaassen discloses each and every limitation as discussed above. Klaassen did not disclose details of predetermined conditions.

76. As to claim 29, Ryu discloses, comprising instructions for writing one or more buffered write operations to the device upon an occurrence of a predetermined condition, wherein the predetermined condition comprises at least one condition selected from a group consisting of detecting that battery power is approaching a specified threshold level [col.6, ll.63-66; battery voltage level equal to second reference voltage].

77. As to claim 30, Ryu discloses, comprising instructions for causing a machine to deactivate the device after writing the one or more buffered write requests [col.6, l.62 – col.7, l.5], the machine to continue operations after deactivating the non-volatile storage device [col.4, ll.63-64; suspend ram would turn device off but have main system on].

78. It would have been obvious to one of ordinary skill in the art, having the teachings of Klaassen and Ryu before him at the time the invention was made, to modify the method of

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Klaassen to include the teachings of Ryu, in order to obtain the claimed medium. One of ordinary skill in the art would have been motivated to make such a combination as it provides a safe way to reduce power consumption in disk drives [device] [Ryu: col.4, ll.31-46].

79. Claim 33 is rejected under 35 U.S.C. 103(a) as being unpatentable over Morcom as applied to claim 31 above, and further in view of Kimura et al., US Patent 6415359, hereinafter Kimura.

80. Morcom discloses each and every limitation as discussed above. Morcom did not disclose explicitly that determining a power state of a device comprises determining whether the device is operating under battery power.

81. Kimura discloses determining a power state of a device comprises determining whether the device is operating under battery power [s1].

82. It would have been obvious to one of ordinary skill in the art, having the teachings of Kimura and Morcom before him at the time the invention was made, to include the explicit teachings of Kimura, in order to obtain the claimed method. One of ordinary skill in the art would have been motivated to make such a combination as it provides a way to extend battery life of a portable computer with a disk drive [Kimura: col.1, l.15 – col.2, l.36].

83. Claim 34 is rejected under 35 U.S.C. 103(a) as being unpatentable over Morcom as applied to claim 31 above, and further in view of Morton.

84. Morcom discloses each and every limitation as discussed above. Morcom did not disclose that selectively reading a superset of the requested file portion from the device into physical memory comprises translating the file system request to read a portion of the file portion into a plurality of read requests that collectively cause the superset to be read from the device.

85. Morton discloses selectively reading a superset of the requested file portion from the device [disk] into physical memory [cache memory] comprises translating the file system request to read a portion [requested data blocks] of the file portion into a plurality of read requests [commands] that collectively cause the superset [data blocks] to be read from the device. [col.2, ll.40-63].

86. It would have been obvious to one of ordinary skill in the art, having the teachings of Morton and Morcom before him at the time the invention was made, to modify the method of Morcom to include the teachings of Morton, in order to obtain the claimed medium. One of ordinary skill in the art would have been motivated to make such a combination as it provides a way to improve latency time for data transfers in a disk system [Morton: col.2, ll.40-63].

87. Claim 41 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rao as applied to claim 39 above, and further in view of Giovannetti.

88. Rao discloses each and every limitation as discussed above. Rao did not disclose explicitly a rule to delete an earlier write request from the buffer when a subsequent write request to a same storage location on the nonvolatile storage device is intercepted and buffered by the intermediate file system driver.

89. Giovanetti discloses a rule [write back] to delete [via overwriting or updating] an earlier write request from a buffer when a subsequent write request to a same storage location is received [col.2, ll.2-4, ll.11-19].

90. It would have been obvious to one of ordinary skill in the art, having the teachings of Giovanetti and Rao before him at the time the invention was made, to include the explicit well known teachings of Giovanetti, in order to obtain the claimed method. One of ordinary skill in

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the art would have been motivated to make such a combination as it provides an efficient way to update data to a disk [Giovanetti: col.2, ll.11-19].

Response to Arguments

91. Applicant's arguments January 3, 2007 have been considered but are moot in view of the new ground(s) of rejection.

92. Applicant's arguments appear to deviate from the previous declaration that the crux of the claimed invention is to conserve power consumption through buffering of read/write accesses based on activation status of memory storage device. Examiner finds the claims and associated arguments to be vastly diverging to distinct areas where different searches and serious burden can no longer be avoided. As such, Examiner may impose a restriction requirement in the future due to the increasing burden of prosecuting the distinct claimed inventions.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tse Chen whose telephone number is (571) 272-3672. The examiner can normally be reached on Monday - Friday 9AM - 5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rehana Perveen can be reached on (571) 272-3676. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

A handwritten signature in black ink, appearing to be 'Tse Chen', with a long horizontal stroke extending to the right.

Tse Chen
March 11, 2007